PREFACE

The terms "black fungi" or "dematiaceous fungi" are practical tags that recall the early days of mycological classification. At the beginning of the 19th century the grouping of anamorphic fungi relied on characters that were easy to observe with minimal optical equipment, such as colour mycelial. Since these times, and till today, hyphomycetes producing olive-grey, brown or black pigment in their cell wall or conidia are classified as "dematiaceous fungi" (referring to the meanwhile obsolete genus *Dematium*, originally introduced for black, clumpy fungi). The dark pigments are presumed to be DHN-like (dihydroxynaphthalene) melanins, although biochemical and structural characterisation has not always been achieved and may involve various precursor molecules.

It has now become clear that black fungi do not comprise a single phylogenetic lineage, but stem from divergent branches of the fungal tree of life. The lineages share production of melanin-like pigments, which has had profound evolutionary consequences for these groups. In human- and phytopathogenic fungi melanins are linked to increased virulence. Melanins also provide protection from a broad range of environmental stress conditions.

With their adaptive potential to uncommon habitats, black fungi have raised increasing interest of mycologists in medical sciences as well as in environmental ecology. It has become clear that a comprehensive understanding of black fungal evolution, ecology and functionality requires a synergic interdisciplinary approach, supported by a cooperative effort among specialists. A first step to bundle the interests in black fungi and to create a common forum was the foundation of a Working Group "Black Yeasts" under auspices of the International Society for Human and Animal Mycology (ISHAM). A small-scale meeting was held in Graz, Austria (May 30–June 1, 2006), and focused on the extremophilic ecology of black fungi. The growing interest in the topic was reflected in the second workshop held in Utrecht, The Netherlands (April 26–28, 2007), jointly with the ISHAM-affiliated Working Group on "Chromoblastomycosis", with 55 participants from 19 countries.

The workshops helped to further establish the scientific network among fundamental scientists, clinicians and workers in applied fields. Oral contributions at the Utrecht workshop covered such diverse topics as human infections, diseases on cold-blooded animals, fungi growing in lichens or on rock under extreme climatic conditions, fungal use in bioremediation of polluted environments, and black yeasts in drinking water, but also susceptibility testing, and molecular evolution. Nearly all contributions included new material and quickly the idea was born that this information would be valuable to be published in a coherent fashion. For the majority of the medical papers we refer to the journal "Medical Mycology", issue 46(1), 2009. The present issue of *Studies in Mycology* entitled "Black Fungal Extremes" reveals unexpected types of ecology, such as growth in Arctic glaciers, Mediterranean rock, in lichens, in pure acid, and in nearly saturated salt solutions. Other papers investigate the evolutionary origins of black fungi, expression of relevant genes, medical aspects, and technical advances in culturing techniques.

This interdisciplinary blend of approaches gives an insight in current research on black fungi. We hope that the present issue will attract the interest of more mycologists, who will join in our initiative to shed more light on the fascinating biology of extremophilic and pathogenic black fungi.

The Editors

November 2008

The papers in this issue of *Studies in Mycology* emerged from a workshop organised by the Working Groups on Black Yeasts and on Chromoblastomycosis, under auspices of the non-profit organisation "International Society for Human and Animal Mycology" (ISHAM). All authors report no conflicts of interest. The authors alone are responsible for the content and writing of the papers.